of physical paths has been selected. If an acceptable physical path is found, the acceptable physical path is allocated."

This description establishes a critical difference between Zadakian's methods and the methods of this invention. It also indicates that Zadakian's path construction algorithm uses a limited set of characteristics, probably only one, to construct a path AND it then must filter the path for meeting multiple characteristics after construction is complete rather than during construction.

Zadakian in "Summary of Invention" describes his invention as a method to allocate bandwidth. The title of the invention is "Method for allocating bandwidth in an optical network". He does not describe it as a route determination method or offer any claims to support route determination.

Zadakian fills a cache with a set of "physical routes" through some method that is not explicitly defined within the patent and then describes how to filter those paths for a path that will meet the required routing characteristics. The correct operation of his invention depends upon having a multiplicity of cache entries for each source destination pair. This invention explicitly defines how routes are built so that they 'a priori' meet the routing requirements. Correct operation in general does not require the cache to have a multiplicity of entries. The primary reason to have a multiplicity of entries is for performance reasons. Cache fill is an expensive operation and the more entries that we have, the more requests for routes that we can fulfill between cache fills.

Section 9 Regarding Claim 1 can not anticipate the invention described.

Use of multiple level routing is a common practice in routing methods. Zadakian wasn't the first to use it. It is part of the public "state of the art" and has been for decades. Internet Protocol and ATM have been using multiple level routing for decades. Lower level paths are treated as one hop links in higher level networks.

Zadakian uses it in the traditional way. He makes no claim for simplest path first or simplest shortest path first route construction.

This invention uses multiple level routing to coerce "shortest path first" into "simplest shortest path first" routing. Further it describes that a route that can be met from the lowest level is by definition a "simplest route". In the Specific Invention, that route is a lambda with no optical or electrical amplification or repeating from end to end.

Just because both inventions use a commonly used mechanism that is in the public domain does not say that one anticipates the other unless that use accomplishes the same result.

Section 9 Regarding claim 2. Zadakian Fib. 1b is a typical network diagram of nodes and links. There is nothing that says it is represented in an array. There is nothing to indicate whether a link is half-duplex or full duplex. There is no description of the properties of

the links or nodes. There is definitely nothing to indicate a cache fill algorithm. The diagram is used as an example to show how virtual paths are used as links. It does not anticipate the standard data infra-structure of any provisioning application and definitely does not anticipate the structure of that for this invention.

Section 9 Regarding claim 2-6,9-12. Fig. 15 is a simplified flow diagram of iteratively scanning a set of paths between 2 end points and choosing the first path that meets the routing requirements. These claims in this invention describe common infra-structure to many network provisioning systems and are necessary parts of their construction. They can not be anticipated by Zadakian because of a simple flow chart and references that are only superficially similar. They claims are necessary components of the invention and have to be claimed to adequately claim the invention as a whole. The invention does not claim that it is the first such invention to use this infra-structure, nor can Zadakian if he does so. An invention needs to be unique in its composition and not necessarily in each of its components. This infra-structure is necessary for claiming a unique path construction that is used for cache filling. Zadakian does not claim path construction so he can not anticipate these claims.

Section 9 Regarding claim 7-8. These claims describe properties of optical fiber links and it can not be claimed that Zadakian anticipates them because they were not invented by Zadakian. As in the prior paragraph, these claims are part of a composition and do not have to be unique in isolation. They are necessary to adequately claim how the invention addresses these properties in the unique route construction methods.

Section 9 Regarding Claim 13. Zadakian can not anticipate the invention described.

You assert that "Zadakian discloses during cache fill". Zadakian does not explicitly define how the routes that are the source of the selection are constructed. In the "Summary of the Invention" third paragraph there is a general description of routing that applies to all routing algorithms including Djikstra's algorithm and the classical maze running algorithm that is taught to first year computer science students. It is part of the public lore of Computer Science and thus can not be a basis of your asserted anticipation. In "Detailed Description of the Invention" paragraph 4, he says that a "QoS-based shortest-path first (SPF) path selection method is invoked" without further description of the method. Since Shortest Path First uses Djiksta's algorithm, it can not anticipate how this invention fills its cache.

This invention describes how routes are selected explicitly. The algorithm is an improvement of classic maze running algorithm that uses a heuristic to prevent geometric growth of data during its execution. That heuristic is described in the invention as a set of pheromone metrics for each link in the routing table. You assert that Zadakian anticipated pheromone metrics. He can't have anticipated the heuristic if he doesn't explicitly describe his route building algorithm. SPF uses Djikstra's algorithm and it doesn't use anything similar to the pheromone metric. It maintains a list of candidates for the next hop with an associated metric value if that hop is taken as its heuristic.

Zadakian never uses the term "pheromone metric" and never describes any heuristic for limiting the growth of paths to be considered during path building to fill a cache.

Section 9 Regarding claims 14-113 Zadakian can not have anticipated these because they all relate to path construction which he does not claim. The anticipation is based on simple diagrams and flow charts that discuss how to choose one of a set of possible paths as meeting the requirements of a routing request when the invention asserted to be anticipated constructs paths which Zadakian does not claim.

Summary of Section 9.

Both inventions are in the same area of invention. Both are solutions to similar problems. They both use similar terminology and public domain infra-structure.

This invention embeds the multiplicity of route requirements into the path construction method of filling the caches for path selection and will only put paths in the cache that WILL meet the requirements. It is a superior solution to the problem of constructing a route that meets all the routing requirements in one step. It uses caches of routes as a performance enhancer and not as a crutch because the underlying path construction algorithm can only create paths based upon connectivity information. The invention is described as software that is implemented on a general processor for network provisioning.

Zadakian builds possible paths from network connectivity alone and then scans those paths when a route is requested to see if any of the possible paths might meet the route requirements. Zadakian doesn't claim or describe in detail how the paths are constructed for filling his caches. Zadakian also doesn't claim or describe a hierarchy of levels that are designed to constrain path construction to the lowest level of network resource usage. Zadakian doesn't even address minimization of network resources. Bandwidth is the only resource addressed. There is no discussion of minimizing the use of optical/electrical repeaters, amplifiers, optical to electrical converters, or other network resources. There is no concern of allocation of bandwidth in an optimal way to prevent bandwidth fragmentation.

Zadakian simply claims a bandwidth allocation method that is imposed over an implied connectivity method. The primary unique thing that Zadakian does is to provide a method of arbitrating bandwidth and cost between service providers in an automated way. Zadakian's invention is embedded in the communications equipment.

There are details that are similar, but the compositions of the two inventions are very different. They solve different problems in different ways. Most of the similarities are that they are in the same field of invention and their descriptions draw upon a wealth of public domain and industry specific literature that provides a pool of terminology for description.